

## CLAIMS

- 1           1.     A bumper bar forming a part of a bumper assembly attached to a  
2     vehicle, said bumper bar comprising:  
3           a roll-formed, tubular beam which is formed along a sweep axis ,  
4     wherein said sweep axis has reverse curvatures creating at least two  
5     symmetrical inflection points.
- 1           2.     The bumper bar of claim 1 wherein the reverse curvature at said  
2     inflection points creates a center section of the beam which extends beyond the  
3     outline of a beam having a constant sweep.
- 1           3.     The bumper bar of claim 1, wherein said beam is comprised of a  
2     high-strength steel.
- 1           4.     A method for fabricating a bumper bar for a bumper assembly,  
2     said method comprising the steps of:  
3           providing a sheet of steel;  
4           roll-forming said sheet to produce a beam which is formed along an  
5     straight central axis; and  
6           reforming said tubular/non-tubular beam by sweeping said tubular/non-  
7     tubular beam along said axis, so as to define a sweep axis, said sweep axis  
8     having reverse curvatures creating at least two inflection points, so that said  
9     sweep axis is a complex sweep axis.

1           5.     The method of claim 4, including the further step of heat  
2     treating includes a further step of heat treating said tubular/non-tubular beam so  
3     as to increase the hardness thereof.

1           6.     The method of claim 5, wherein said step of heat treating  
2     includes a further step of quenching, and wherein said step of quenching is  
3     implemented after said step of reforming tubular/non-tubular beam.

1           7.     The method of claim 4, wherein roll-forming said sheet of steel  
2     to produce a beam comprises roll-forming said sheet of steel to produce a beam  
3     having an open seam.

1           8.     The method of claim 7, including the further step of closing said  
2     seam.

1           9.     The method of claim 8, wherein said step of closing said seam  
2     comprises welding said seam.